

DATE: November 19, 2010

Analytical Report

TO: { }

FROM: { }

Molecular Weight Distribution of { }

Abstract

The molecular weight distribution of a { } of { } was determined using multidetector size exclusion chromatography, equipped with multiangle light scattering photometer, capillary viscometer and differential refractometer. Such an approach allows one to produce molar mass elution profile (column calibration) without any additional polymer standards. The mobile phase was { }, which was also a { }. It was shown that { } of { } had { }.

Request/Need

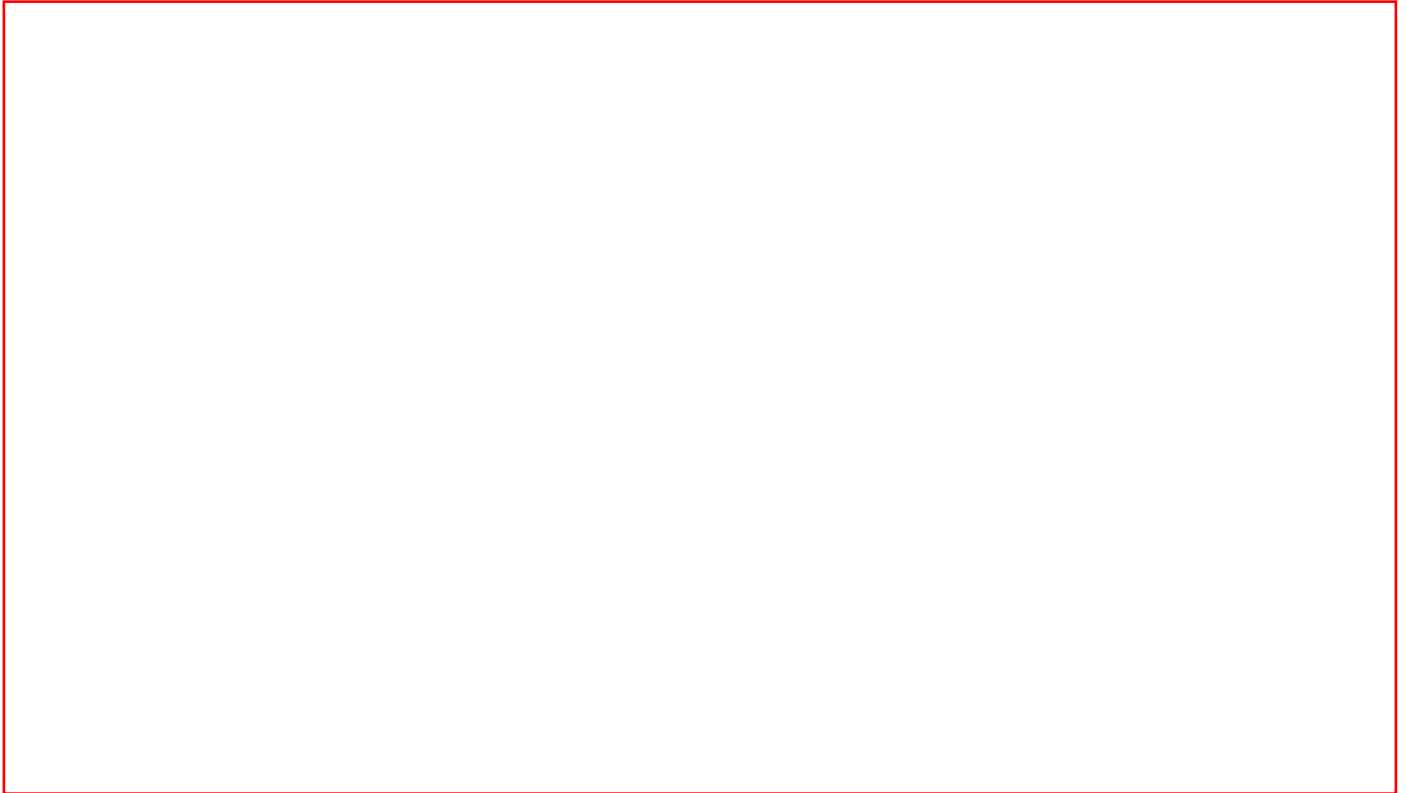
{ }

Results and Discussion

The traces from three on-line detectors, light scattering, viscometer and refractive index, as functions of elution volume V , together with the molar mass (M) elution profile, are shown for { }. This profile is obtained as a



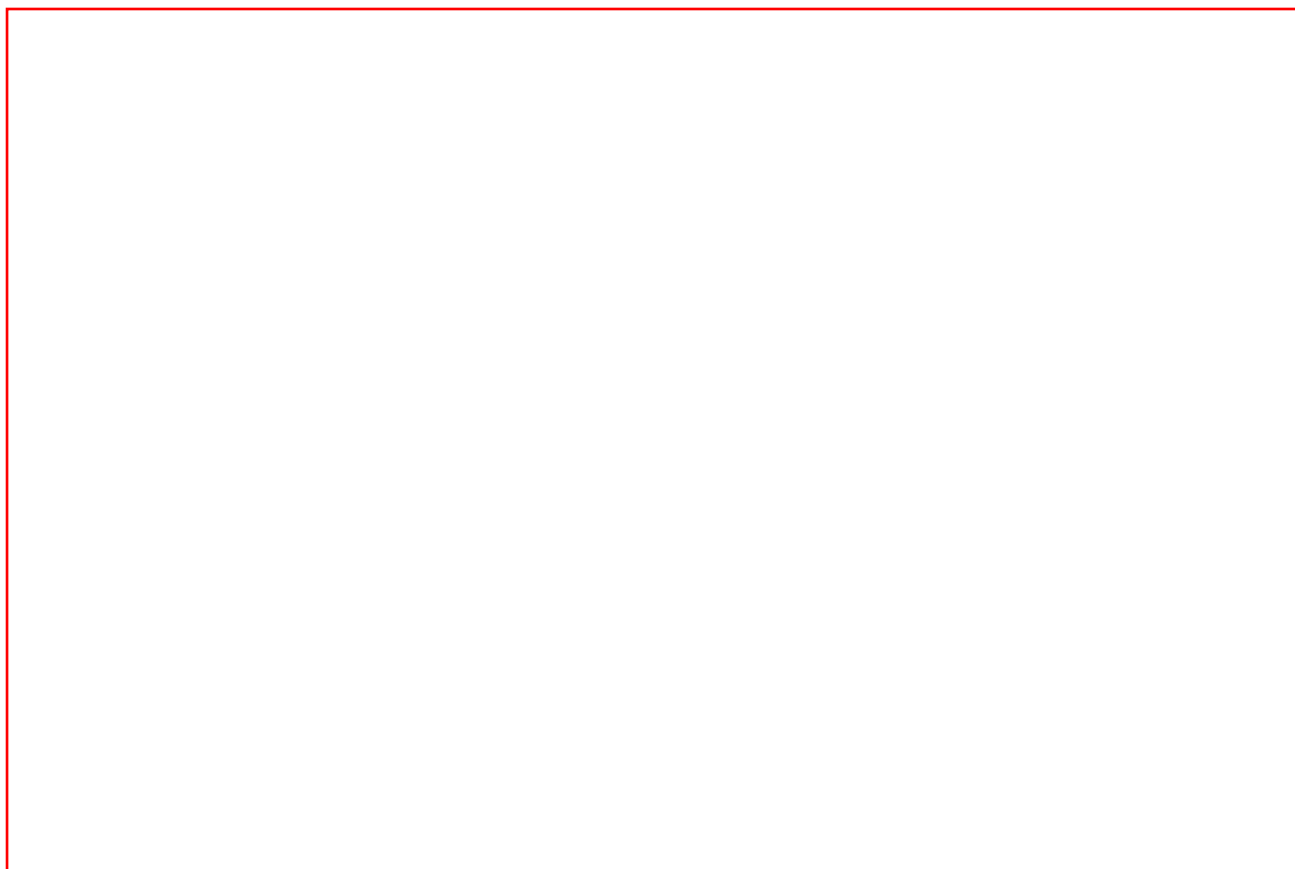
ratio of the excess Raleigh ratio from the LS chromatogram to polymer concentration from the RI chromatogram, measured across the entire polymer distribution and fitted with a polynomial as Log M vs. V.



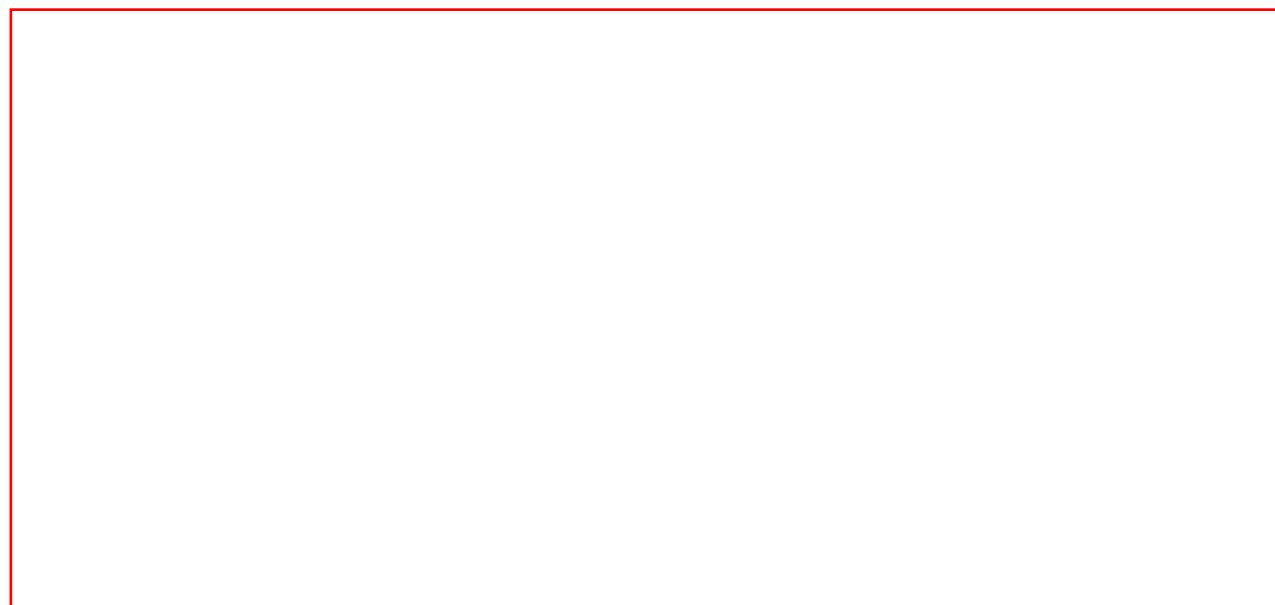
{ }. Light scattering { } and refractive index { } chromatograms for { }.

The molar mass elution profile together with the refractive index chromatogram shown in { }, were used to generate molecular weight distribution (MWD), shown in { }. The MWD describes a normalized distribution of weight fractions of macromolecules, $dwt/d\log M$, plotted against logarithm of their masses. Average molar masses, shown in { }, are calculated as corresponding statistical moments of this distribution. Finally, { } demonstrates { }.





{
}. Molecular weight distribution for {
}. {
}.



{ } . Molecular weight distribution table { }

Sample Name { }

100





Experimental Section

System: Size exclusion chromatography system Model Alliance 2690TM from Waters Corporation (Milford, MA), with a Waters 414TM differential refractive index detector (DRI) and Wyatt Technologies (Santa Barbara, CA) multiangle light scattering detector Model DAWN 8+ and differential capillary viscometer detector ViscoStar .

Software for data acquisition and reduction: Astra® version 5.4 by Wyatt and Waters Empower version 2 by Waters.

Columns for separation: {

}

Mobile Phase: {
}

Chromatographic Conditions: Temperature: 35°C, {
}

Sample Preparation: {

}

Data reduction method: triple detection method incorporating data from all three detectors: refractometer, viscometer and light scattering photometer (8 scattering angles). No standard for column calibration is involved in the data processing